1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 into the saguaro forests of the eastern base of Sierra Seri; on the east it is miles in breadth, passing gradually into the normal Sonoran plain;
137 on the south it widens still farther, stretching all the way to Arenales de Gil and Pozo Escalante, and merging into the playa-like mud-flats bordering Laguna la Cruz, into which the gulf waters are sometimes forced by southwesterly gales at high spring tides. Throughout this portion of the desert, marine shells are scattered over the playa-like flats or lodged in the adjacent banks, sometimes in great beds; the vegetation is scantier than usual and largely of salt-loving habit; the mud-flats are usually coated with saline and alkaline crusts, while the dunes are soft and fluffy, and expand into broad belts perforated with the tunnels of the surprisingly abundant rodents. Across this plain
131 of bitter sand-dust lie the two hard land routes to Seriland—the supposed Escalante route of 1700, down the fan of Rio Bacuache and thence by Barranca Salina; and the Encinas route, down the northern border of the Rio Sonora fan and thence by Pozo Escalante to the shores of Bahia Kino.[1]

000 Desierto Encinas is an impossible human habitat in any proper sense; it is merely a broad and hardly passable boundary between habitats. The hardy stock of the frontier ranchos, pasturing partly on the thorny fruit of the cholla, push far out on the plains, and are sometimes watered for short periods, under strong guards of heavily armed vaqueros, at Barranca Salina; yet the greater part of the expanse is trodden only
36 by the Seri. Two or three ruined frames of Seri jacales and a few graves crown the low knoll near Pozo Escalante, and there are one or two house remnants near Barranca Salina; these are notable not only as the easternmost remaining outposts of Seri occupancy, but because they represent the only known instances in all Seriland of the erection of even temporary houses adjacent to water. Distinct paths, trodden
[487] deep by bare Seri feet, radiate from both waters toward the Seriland interior, but no traceable trails extend eastward.

The southern limit of Desierto Encinas is marked either by the broad
133 mud-flats opening into Laguna la Cruz or by the coast of the gulf, the coast cutting the lower portions of the plain being accentuated by a sand-bank 30 or 40 feet high, against which the surf thunders in nearly
[487] continuous roar, audible halfway or all the way to Pozo Escalante. A Seri trail skirts the crest of this bank, sending occasional branches into

[122] [1] Both the routes were traversed by the expedition of 1895, the former from the headwaters of Rio Bacuache to the upper portion of its alluvial fan, and thence from the abandoned Rancho Libertad on the lower portion of the fan across Desierto Encinas by way of Barranca Salina. In the northern crossing a light vehicle (the first to traverse this portion of the desert), drawn by four horses and aided by several horsemen, was taken from Rancho Libertad across the northern portion of Playa Noriega and thence up Arroyo Mitchell to a point midway between Barranca Salina and Johnson peak, and was brought back over the same route. The Encinas trail from Rancho San Francisco de Costa Rica was traversed four times each way by the same outfit, and once each way by the running gear of a heavy wagon carrying the rude craft (about 1,000 pounds in weight) in which the Seri waters were navigated, this vehicle being drawn by 8 to 12 horses, frequently changed. Typical aspects of both routes are shown in plate III, the upper figure representing the Encinas trail and the lower a distant view of Sierra Seri, taken from Playa Noriega, in the depths of Desierto Encinas.

h: McGee E-5 (1894-1895)1898 NU31 Seri NU31

the interior. At Punta Antigualla the bank expands and rises into a great mammillated shell-mound nearly 100 feet high, with several of the cusps occupied by more or less ruined jacales; and occasionally occupied houses occur midway thence to the southernmost point of Sierra Seri, and again at the base of the first spur east of Punta Ygnacio. Beyond Punta Antigualla the sweep of the waves is stronger than in Bahia Kino, and the coastal sand-bank is generally higher. Between the rocky buttresses of Punta Ygnacio and the next spur eastward the sand-ridge rises fully 50 feet above mean low tide, and here, as elsewhere, its verge is protected by a fog-fed chaparral thicket with occasional clumps of okatilla and other cacti. Behind the coast barrier lie lagoon-like basins, generally dry and floored with saline silt-beds, though sometimes occupied by briny pools formed through seepage during southwesterly gales; and there are physiographic indications that the northwestward extension of Laguna la Cruz formerly stretched some miles farther than now and lay in the rear of Punta Antigualla in such wise as to form a source of supply of the clam-shells of which the eminence is built.

2. Sierra Seri is a double range, divided mid-length by a broad saddle barely 2,000 feet in height.[1] Like other Sonoran ranges, the nuclear portions are exceedingly rugged and precipitous—at least two of its pinachos shoot so boldly that they commonly seem to overhang, and have been called leaning peaks. In large part the precipices rise abruptly from a symmetrical dome molded by sheetflooding, much as the insulated buttes rise from the Bacuache fan in northeastern Seriland; so that the tract lying between Desierto Encinas and El Infiernillo is a composite of exceptionally precipitous and exceptionally smooth mountain slopes. One of the Seri trails radiating from Barranca Salina lies across the mid-sierra saddle; others push into several mountain valleys, and the largest leads to Tinaja Trinchera, at the base of Johnson peak, where there are a few low walls of loose-laid rubble, somewhat like those of the trincheras (entrenched mountains) farther eastward—the only structures of the sort seen in Seriland. Toward the southern end of the range lie various trails, the most conspicuous paralleling the coast, either near the shore or over the steep salients, according to the configuration; while here and there ruinous jacales a few yards from the coast attest sporadic habitation. The eastern shore of Bahia Kunkaak from Punta Ygnacio northward reveals a typical geologic section of the Sonoran province: the transgressing waves have carved in the granitic subterrane a broad shelf lying just below mean low tide and usually stretching several furlongs offshore; this shelf is relieved here and there by remnantal crags of obdurate rocks, cumbered by bowlders and locally sheeted with sand and arkose derived from mechanically disintegrated granite; while the

[1] The northern portion, as seen from the east, is shown in plate III; the southern portion, as seen from the west, appears in the upper part of plate IV, while the southwesternmost point is shown in the lower part of the same plate.

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 inner margin of the shelf is a sea-cliff, usually 30 to 50 feet high, of which the lower half is commonly granite and the upper half unconsolidated and recent-looking mechanical debris collected by sheetflood erosion. Sometimes the granite of the subterrane is replaced by volcanics; sometimes ancient and firmly cemented talus deposits separate the superficial mantle from the subterrane, as shown in the lower part of plate v; sometimes the line of sheetflood planation passes below tide-level, when the waves beat against the unconsolidated deposits in a deep embayment; sometimes the sharply defined planation surface ends abruptly at the sides of subranges or buttes shooting upward in the abrupt slopes characteristic of the sierra proper; yet this 10-mile stretch of coast is a nearly continuous revelation of the structure of sheetflood-carved plains and of modern marine transgression. The debris of the combined processes forms an abundant and varied assortment of bowlders, cobbles, and pebbles, whence the inhabitants readily derive their simple implements without need for studied forethought or manual cunning.

The long sand-spit terminating in Punta Miguel and the shorter one terminating in Punta Arena are the product of geologically recent wave building, and consist of irregular series of V-bars, backed by lagoon-like basins and enclosing considerable bodies of brine in the central portions; and the bars and basins become successively higher outward, in such wise as to attest the secular subsidence of this coast. [361] Several jacales are located on the higher portion of the southern sand-spit, midway between Punta Granita and Punta Miguel, while foot-[487] paths traverse the flat and skirt the coast. Toward the terminal portion of the spit the sand is blown into hummocks, held by clumps of salt enduring and sand-proof shrubbery; but there are no rancherias here, despite the fact that it is a natural point of embarkation—doubtless because no Seri structure could withstand the sand-drifting gales and storm inundations of this exposed spot. The more protected [136] lagoons behind the outer bars harbor abundant waterfowl, within bowshot of shrub-glumps and dunes well adapted to the concealment of hunters, while the mud-flats open to the tide abound in clams and other edible things. The features of the Punta Miguel sand-spit are repeated with variations along the eastern shore of El Infiernillo; and [361] Seri jacales, evidently designed for temporary occupancy, occur here and there, usually on higher banks above reach of the severer storms.

3. Tiburon island itself is apparently the chosen home of the Seri—[131] a habitat to which the mainland tract is at once a dependency, an alternative refuge, and a circumvallation. Its dominant range, Sierra Kunkaak, mates Sierra Seri in its essential features, though the rocks are for the greater part ordinarily obdurate eruptives rather than exceptionally obdurate granites, as in the mainland sierra; accordingly the range is somewhat lower and broader, while the sheetflood sculpture, with its sharp transition into precipitous cliffs, is somewhat less trench-

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

133 fortable haven at high tide, it is mostly mud-flat and sand-waste at extreme low tide—a condition which explains the stranding of an 80-foot whale in this treacherous harbor about 1887. The ruda is between two and three miles in length. It abounds in marine life of
136 kinds preferring quieter waters: clams are plentiful in its mud-flats, a sponge lines portions of the bottom toward its inner extremity, oysters cluster numerously on bowlders and on the mangrove-like roots and trunks of a large shrub along the outer shore, and various fishes find refuge here from the fierce currents and the hungry sharks and porpoises of the open strait; these and other creatures form food for innumerable waders and other water-fowl that seek shelter in the quiet bay, which is still further protected by salt-enduring shrubbery on the bars of the point and by the shrubby thickets and wave-cast banks and wind-built dunes on the mainland side.

361 The combination of conditions renders this portion of the Tiburon coast the optimum habitat of the Seri Indians. There are, indeed, no houses or other traces of permanent habitation on Punta Tormenta itself, which is not only swept by gales but must sometimes be inundated by gale-driven waters at high spring tide; but at the inner end of the long sand-spit, and also on the mainland opposite the outer portion of Rada Ballena, there are extensive and well-kept rancherias, capacious enough to accommodate comfortably thirty or forty Seri families, i. e., 150 or 200 persons. Toward its landward end the sand-spit is built
311 largely of pebbles and cobbles, of which thousands of tons are adapted to industrial use; sea-food is practically unlimited and is readily taken; water-fowl literally crowd the protected ruda within arrow-shot of natural cover; the outer slope of the bar is admirably suited for landing and embarking balsas in calm weather, while the bay is an ideal harbor for the portable craft, and the shrub-grown shores give unlimited opportunity for concealing them when not in use; the dunes and banks are high enough to protect the low jacales from storm-winds, while the abundant sponges and turtle-shells afford material for thatching and shingling the more exposed walls and roofs; and finally,
[312] it is but a favorite distance (about 4 miles) to the permanent fresh
● 487 water of Tinaja Anita. From this Seri metropolis well-trod trails radiate toward all other parts of the island; the best-beaten leads to the tinaja, sending branches into all the neighboring gorges, in which game is sometimes taken; next best-worn is the trail laid across Sierra Kunkaak to strike Arroyo Carrizal mid-length of its permanently wet portion; others pass northward to rancherias at different points on the coast, and still another skirts the coast southward by several smaller rancherias to the considerable jacal collection near Punta Narragansett—this, like other longshore routes, having alternative trails, the evanescent fair-weather one following the beach, while the permanent path threads the thorn-set thickets marking the crest of the sea-cliff or cuts across the longer salients. The Narragansett rancheria is

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

also a center for radiating trails, the best-beaten of these leading toward the fresh waters of Tinaja Anita and Arroyo Carrizal; and even the rancherías half-way thence to Punta Mashém send their most permanent paths over 15 miles of intervening ranges and spall-strewn valleys toward the same waters. According to Mashém's cautious statements, there is a minor Seri metropolis at the northwestern spur of Sierra Kunkaak, within reach of Pozo Hardy and Arroyo Agua Dulce, and two or three smaller rancherías along the western shore; but these were not reached by the 1895 expedition. 487 [361]

4. The seas washing Seriland are notably troubled by tides and winds. Gaping toward the Pacific, and narrowing and shoaling for the 800 miles of its length (measured from midway between Islas de Tres Marías and Cabo San Lucas), Gulf of California approaches Bay of Fundy, Bristol channel, and Broad sound as a tide accumulator; while the semidiurnal sweep of the waters in the upper half of the gulf is conditioned by the constriction of the basin to a fraction of its average cross-section at the narrows between Isla Tiburon and Punta San Francisquito. Toward the head of the gulf the ordinary spring tides range from 20 to 25 feet, and may be much increased by favoring winds; the debacles culminate there, but the currents culminate off Seriland in the great tide-gate half dammed by the islands of Tiburon, San Esteban, San Lorenzo, and Salsipuedes,[1] with their marine buttresses, and through the breaches of Paaaje Ulloa, Estrecho Alarcon, and Canal de Salsipuedes flow, four times daily, some two or three cubic miles of water in tremendous tidal floods, probably unsurpassed in vigor elsewhere on the globe. Naturally the islands and the adjacent coasts afford extraordinary examples of marine transgression; and while exceptional wave-work is a factor, the transgression is undoubtedly due mainly to the extraordinary tidal currents in this gateway of the gulf. The fierce currents and the frequent storms of the region condition local navigation, and have undoubtedly contributed to the development of the peculiarly light, strong, and serviceable water-craft of the aboriginal navigators among the islands. 133

El Infiernillo derives its distinctive characteristics largely from the local character of the tides. Bahía Kunkaak is a funnel-shape embayment so placed as to catch half the volume of the incoming tide and to

[1] Originally the name Islas Sal-si-pue-des (Get-out-if-canst) was applied to the various islands of this gateway of the gulf, including San Lorenzo, San Esteban, and San Agustin (now Tiburon), together with the smaller islets, as shown in the map of Padre Fernando Consag (in Noticia de la California y de su Conquista, etc., por el Padre Miguel Venegas, 1757, tomo iii, p. 194); and Padre Consag's account of the currents encountered in 1746 explains the designation: "The great sea which runs here even in fair weather would not allow us to stay, and it was with great difficulty we took in a little water. We now attempted to weather the Cape of San Gabriel de Sal-si-puedes, so greatly dreaded by seamen on account of these islands, several contiguous points of land and many ledges of sunken rocks extending a great way from the land. Here the sea is so agitated by the current that a gale or a calm makes but little difference" (English translation of Venegas' Noticia, titled A Natural and Civil History of California, 1759, vol. ii, pp. 312-313). Hittell speaks of "the group of islands known as Salsipuedes, the largest of which is now called Tiburon" (History of California, 1898, vol. i, p. 235). Dewey restricted the name to a single small island near the Baja California coast. Further references to the islands and their designations are noted postea, p. 46. 103 114